

REMARKS

I. STATUS OF THE CLAIMS

Claims 24-42 and 45-57 are pending in this application.

Claims 24 and 47 have been amended to correct minor typographical errors.

Claim 38 has been amended to clarify that the polymeric composition is derived from the same components as Claim 24. Applicants submit no new matter has been added by this amendment.

II. SECTION 102 REJECTION

The Examiner has maintained the rejection of claims 24-27, 30-42, and 45-57 under 35 U.S.C. § 102(b) as anticipated by Japanese Patent Publication H10-283851 to *Nomura et al.* ("JP 851") for the reasons disclosed at pages 2-5. Applicants respectfully traverse this rejection for at least the reasons presented below.

Applicants' claims are directed to polymeric compositions comprising a polyethylene, a radical initiator, and at least one unsaturated carboxylic acid of general formula (I) in free form; electrical cables coated with such compositions; processes of preparing electrical cables coated with such compositions; and electrical cables made by a process using such a composition.

A prior art reference anticipates a claim only if each and every element as set forth in the claim is found, either expressly or inherently, in the lone reference.

M.P.E.P. § 2131. Contrary to the Examiner's contention, the polymeric compositions of *Nomura et al.* do not anticipate any of Applicants' claims. The law requires

identity between the claimed invention and the prior art disclosure. See, *Kalman v. Kimberly-Clark Corp.*, 218 U.S.P.Q. 781, 789 (Fed. Cir. 1983).

Nomura et al. discloses two types of polymeric compositions for an insulating layer. Type I is an ethylene copolymer derived from a dibasic acid anhydride and at least one polar-group containing monomer. JP 851 at Abstract, & ¶¶5, 7. Type I is not reported to have a radical initiator. *Id.* Type II is a cross-linked resin comprising a Type I polymer blended with a polyolefin based resin, a radical initiator (2,5-dimethyl-2,5-di-(t-butylperoxy)hexane) and an antioxidant (thiocarboxylic acid ester based). *Id.* at Abstract, & ¶5. Accordingly, *Nomura et al.* does not teach a polymer composition comprising, *inter alia*, at least one unsaturated carboxylic acid of general formula (I) **in free form**.

First, *Nomura et al.* does not expressly teach that its “at least one polar-group containing monomer” includes the unsaturated carboxylic acids recited in all claims.¹ The only polar groups for these monomers are carbonyl, nitrile, and nitro groups (see, e.g., JP 851 at ¶5), and not the **carboxyl** group of Applicants’ claims.² This is further emphasized by the recited examples of such monomers: ethyl acrylate, vinyl acetate, methvinyl ketone, and 2-nitrostyrene. See, e.g., JP 851 at ¶8. None of which is an unsaturated carboxylic acid of general formula (I). Even the compositional examples show that *Nomura et al.* does not disclose a carboxylic acid of the claims. All of the embodiments are based on a polymeric composition derived

¹ By definition the dibasic acid anhydride cannot be the recited unsaturated carboxylic acid of formula (I).

from an acrylic acid ester. JP 851 at ¶18. However, an acrylic acid **ester** is not a carboxylic acid; -COOR versus -COOH. Thus, the anticipation rejection is improper for this reason alone.

Second, even if the “at least one polar-group containing monomer” is construed as disclosing an unsaturated carboxylic acid, the polar-group containing monomer is not **in free form**. As defined by the specification, the phrase “in free form” means that “the carboxylic acid has not been introduced beforehand into the polyethylene by copolymerization or pre-grafting.” Application at page 9, lines 10-15. In other words, the acid is a free component until grafted to the polyethylene by reaction with said radical initiator. See *id.* at page 9, lines 1-4, page 11, line 35-36, page 12, line 24.

In contrast, *Nomura et al.* teaches that its “polar-group containing monomer” is copolymerized or grafted to the polyethylene component **before** the addition of the radical initiator, 2,5-dimethyl-2,5-di-(t-butylperoxy)hexane. See JP 851 at Abstract, ¶¶5, 18, & Table 1. For example, the Type I polymer is formed before being mixed with a radical initiator. In none of these disclosures within JP 851 is the alleged carboxylic acid of the claims “**in free form**.” Therefore the compositions of *Nomura et al.* cannot anticipate the claims.

Third, the disclosed “ethylene-acrylic acid copolymer” of ¶8 is also not a disclosure of a carboxylic acid of general formula (I) **in free form**. The “ethylene-acrylic acid copolymer” of *Nomura et al.* is a polyolefin-based resin that can be

² Upon further review of *Nomura et al.*, Applicants withdraw its earlier genus/species argument in view of the fact that *Nomura et al.* does not disclose carboxylic acids of

blended with the composition of Type I, an antioxidant, and a radical initiator to form the composition of Type II. JP 851 at Abstract. However, in contrast with the definition of being "in free form," the acrylic acid has already been copolymerized with the ethylene prior to the addition of the radical initiator. *Id.* at ¶18. This is further evidenced by JP 851's composition examples, where the radical initiator is added **after** the formation of the ethylene-olefin resin. *Id.* at ¶18, & Table 1.

As noted above, anticipation requires that each and every element of the claims be met, either expressly or inherently, by the cited reference. "The identical invention must be shown in as complete detail as is contained in the . . . claim." See M.P.E.P. § 2131 (quoting *Richardson v. Suzuki Motor Co.*, 9 U.S.P.Q.2d 1913, 1920 (Fed. Cir. 1989)). Since *Nomura et al.* do not teach either (1) an unsaturated **carboxylic acid** of general formula (I) or (2) an unsaturated carboxylic acid **in free form**, that requirement for anticipation has not been met here. Accordingly, the rejection under Section 102(b) has been overcome and should be withdrawn.

III. SECTION 103 REJECTION

The Examiner has maintained the rejection of claims 28 and 29 under 35 U.S.C. § 103(a) as obvious over Japanese Patent Publication H10-283851 to *Nomura et al.* for the reasons disclosed at pages 3-5. Applicants respectfully traverse this rejection for at least the reasons of record and the reasons presented below.

Applicants' invention is not obvious over *Nomura et al.* As an initial matter, to establish a *prima facie* case of obviousness, three basic criteria must be met. First,

general formula (I).

there must be some suggestion or motivation, either in the reference itself or in the knowledge generally available to one of ordinary skill in the art, to modify the reference. Second, there must be a reasonable expectation of success. Finally, the prior art reference must teach or suggest all the claim limitations. See M.P.E.P. § 2143.

As discussed above, *Nomura et al.* does not teach or suggest a composition comprising (1) an unsaturated **carboxylic acid** of general formula (I) or (2) an unsaturated carboxylic acid **in free form**, as required by claims 28 and 29. Moreover, as admitted by the Examiner (Office Action at 3), *Nomura et al.* does not teach methods for introducing the unsaturated carboxylic acid to the ethylene copolymer. In fact, there is no teaching of introducing the unsaturated carboxylic acid in a free form, i.e., where the acid is a free component until grafted to the polyethylene by reaction with said radical initiator. Applicants incorporate by reference herein the arguments made above in full. Hence, the Examiner has not established that *Nomura et al.* and the prior art disclose all of the claim elements, as required by M.P.E.P. § 2143.03.

Yet, the Examiner has asserted that it would be obvious “to produce a grafted polyethylene polymer wherein the polyethylene pellets and carboxylic acid are subsequently mixed. . . .” Office Action at 3. This rejection is inadequate on its face. The Examiner’s statement is merely conclusory and offers to no **reason**, let alone factual evidence, as to why the combination would be obvious. M.P.E.P. § 2143.01. In contrast to the rejection, the Federal Circuit has recently stated that:

[t]he factual inquiry whether to combine references must be thorough and searching. It **must be based on objective evidence of record**. . . . Thus the Board must not only assure that the requisite findings are made, based on evidence of record, **but must also explain the reasoning by which the findings are deemed to support the agency's conclusion**.

In re Lee, 61 U.S.P.Q.2d 1430, 1433 (Fed. Cir. 2002) (emphasis added). Hence, there must be objective evidence of a motivation to modify the teachings of Nomura et al., not mere conjecture.

Applicants respectfully remind the Examiner that, in moving from the prior art to the claimed invention, one cannot base a determination of obviousness on what the skilled person might try or find obvious **to try**. See e.g., M.P.E.P. § 2145, Section X, Subsection B. Rather, the proper test requires determining what the prior art would have **led** the skilled person **to do**. See *In re O'Farrell*, 7 U.S.P.Q.2d 1673 (Fed. Cir. 1988). Here, the Examiner has not advanced a reason why the prior art would lead to the claimed invention. Moreover, the Examiner's "argument" does not address the claims' requirement that the carboxylic acid be "in free form," *i.e.*, the acid is a free component until grafted to the polyethylene by reaction with said radical initiator. See specification at page 9, lines 1-4, page 11, line 35 - page 12, line 24. In the cited prior art, the acid is polymerized or grafted before the radical initiator is added, which yields a different product with different properties. There is simply no motivation in the cited art, as presented by the Examiner, to modify this.

Applicants submit there is no evidence of record as to why one of ordinary skill in the art would have been motivated to modify *Nomura et al.* to achieve the claimed process. In fact, Applicants submit that the claimed process is inconsistent

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with the teachings of *Nomura et al.* *Nomura et al.*'s process requires either that the acid be pre-polymerized or pre-grafted with the ethylene prior to the addition of the radical initiator. To change that process would render *Nomura et al.* inoperative, which is improper in a Section 103 rejection. M.P.E.P. § 2143.01 ("If proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion to motivation to make the proposed modification.")

Finally, unexpected results were found when introducing the unsaturated carboxylic acid in a free form, i.e., where the acid is a free component until grafted to the polyethylene by reaction with said radical initiator. As reported on pages 6 and 7 of the specification, Applicants discovered that when the polyethylene is modified with carboxylic acid monomers by prepolymerization, the monomers form blocks and therefore are not evenly distributed throughout the polymer and when the polyethylene is modified with carboxylic acid monomers by pregrafting, the monomers tend to homopolymerize. Both scenarios are to be avoided and Applicants unexpectedly found a method of doing so. Specification at 7-8.

For at least these three reasons, Applicants maintain that the Examiner has not set forth a prima facie case of obviousness.

IV. CONCLUSION

Applicants respectfully request that this Amendment under 37 C.F.R. § 1.116 be entered by the Examiner, placing claims 24-42 and 45-57 in condition for allowance. Applicants submit that the proposed amendment of claims 24 and 38 does not raise new issues or necessitate the undertaking of any additional search of

the art by the Examiner, since all of the elements and their relationships claimed were either earlier claimed or inherent in the claims as examined. Therefore, this Amendment should allow for immediate action by the Examiner.

Finally, Applicants submit that the entry of the amendment would place the application in better form for appeal, should the Examiner dispute the patentability of the pending claims.


In view of the foregoing remarks, Applicants submit that this claimed invention, as amended, is neither anticipated nor rendered obvious in view of the prior art reference cited against this application. Applicants therefore request the entry of this Amendment, the Examiner's reconsideration and reexamination of the application, and the timely allowance of the pending claims.

Please grant any extensions of time required to enter this response and charge any additional required fees to our deposit account no. 06-0916.

Respectfully submitted,

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